

Mindfulness-Based Education: Exploring Cultural and Age-Related Perspectives Through Course Design

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Abstract: This study delves into the complexities of designing and implementing mindfulness education tailored to children and adolescents. Using basic theories of cognitive development such as Piaget's stages and Vygotsky's socio-cultural theories, the mindfulness classroom was designed to accommodate age-specific cognitive abilities and resulted in a curriculum design model that can be flexibly utilized to develop self-regulation skills and relate to activities that are critical in childhood, with the theory of mindfulness, present-focused activities, meditation activities, and perceptual activities that can be utilized as habits in real life. Through a combination of theoretical present-focused activities, meditation-related activities, perception-related activities, and activities that can be utilized in real life as habits, students develop self-regulation skills that are consistent with the cognitive flexibility that is essential in development. Sensory-related activities reinforce the integration of mindfulness into daily life. Working together to ensure accessibility in low socioeconomic status environments promotes inclusivity classroom, the study took place in a collective Chinese culture, but consideration of individualistic culture is also essential, and curricula tailored to the socio-emotional challenges of different ages need to be continually refined. Future research should explore cultural adaptation and expand the diversity of participants for a more inclusive understanding. In conclusion, this study advocates for mindfulness curricula to be synchronized with cognitive development, emphasizing that curricula should be designed with age-appropriate content, meditative practices, and real-life connections and adapted to different cultural backgrounds, socioeconomic backgrounds, and student populations with special needs.

Keywords: Mindfulness, Cognitive Development, Culture Study, Educational Inequality

1. Introduction

Mindfulness, as defined by Davis and Hayes, is an uninterrupted, non-judgmental, and non-reactive awareness of one's immediate experiences [1]. It advocates for the complete immersion of thoughts and attention in the present moment, discouraging mental clutter and alleviating the torment arising from dwelling on the past or worrying about the future. By embracing the entirety of the present experience, individuals can discover that pain and fatigue naturally dissipate, while satisfaction and happiness reside within the present, fostering a serene state of mind [1]. Dr. Kabat-Zinn, in the 1970s at the Massachusetts Institute of Technology, integrated mindfulness into psychological therapy, marking it as a scientifically validated standard psychological intervention technique. Over the past

four decades, more than 3,000 scientific studies have showcased the diverse and significant benefits of mindfulness practice. It liberates individuals from impulsive emotional reactions, enabling them to maintain composure even amid intense emotions. It enhances emotional regulation, fortifies resilience against negative emotions, and reinstates control over self and life choices. The practice of mindfulness facilitates a reconnection between the mind and body, allowing individuals to discern genuine internal needs. Informed by bodily sensations, actions become aligned with a holistic state of well-being, transitioning from adverse living conditions to a unified and healthy mind-body state. Through fostering a focus on the present moment, mindfulness cultivates an attentive, distraction-free state, augmenting concentration and enhancing overall brain function. Each moment becomes an opportunity to savor life [2].

Mindfulness has gained acclaim for its effectiveness in mitigating cognitive fatigue, demonstrated by its capacity to inhibit the medial prefrontal cortex and posterior cingulate cortex within the default mode network (DMN) to regulate cerebral energy resources [3, 4]. Complementing these neurophysiological effects, mindfulness also serves as a cognitive tool. By recognizing and transcending ruminative thought patterns, individuals practicing mindfulness break free from past regrets and alleviate anxiety and depression. This transformative cognitive process interrupts the cycle of self-criticism. Persistent mindfulness practitioners not only exhibit reduced cortisol levels, contributing to the cultivation of a "more resilient brain" less prone to fatigue [3] but also become less susceptible to external disturbances. They draw on internal strength and support, fostering an enhanced appreciation for the beauty and joy of daily life, and living authentically in the present moment. Consistent mindfulness practice shields individuals from being hijacked by their emotions and biases. It untangles them from fixed reaction patterns, preserving the potential to perceive the real world, embrace new possibilities, and make conscious choices, thereby harnessing the life energy that transcends time and space [2].

As a positive lifestyle and self-care method, mindfulness practices significantly contribute to improving children's self-regulation abilities and interactive skills with their environment during developmental stages. Mindfulness proves beneficial for promoting self-regulation in school-age children, encompassing the ability to regulate attention and emotions [5]. The preschool and early elementary school years are crucial for the later development of children's learning abilities, focus, and character formation, including aspects such as executive function and cognitive flexibility. Mindfulness practices effectively contribute to regulating these aspects. They play a positive role in the cognitive and socio-emotional development of children at this stage. Experimental evidence suggests that both static meditation and dynamic activities significantly impact mindfulness in children, manifesting in improved communication skills and a proclivity for collaboration. Children not only exhibit a more positive attitude towards yoga but also develop a newfound appreciation for mindfulness, showing increased motivation in academic pursuits. These practices also enhance the attentional focus of preschool children, fostering improved concentration, heightened social skills, increased imaginative capabilities, and a greater willingness to share. Additionally, there is an observed improvement in self-regulation and soothing abilities [5]. These findings align with the principles of the growth mindset from constructivism, emphasizing the idea that different abilities and knowledge can be acquired and expanded over time [6], also yield foreseeable effects on the future learning abilities and development of children.

During adolescence, the effects of mindfulness become more pronounced in various aspects. This transitional phase from childhood to adulthood is marked by significant changes, preparing individuals for the role shift to adulthood. Adolescents face increasing pressures related to academics, adapting to their environment, and navigating interpersonal relationships, contributing to a rise in mental health issues [7]. A comprehensive mindfulness assessment and practice during this stage can significantly aid adolescents in learning to cope with emotions such as anxiety, stress, and depression.

Beyond enhancing concentration and self-expression, mindfulness education in adolescence extends to providing a broader environmental perspective, offering assistance both within and outside the educational system. It proves beneficial in regulating stress, reinforcing emotional resilience, and facilitating a smoother transition into adulthood [8]. Through the summarized and practiced discussions on previous research, it is evident that there are significant developmental differences in the engagement of preschool and adolescent children in mindfulness training. Current research indicates that mindfulness practices generally have a positive impact on academic motivation and attention in preschool children [5]. However, feedback on school-based mindfulness training among adolescents shows significant divergence, with some expressing negative evaluations, while their peers engage positively in mindfulness activities [9]. This discrepancy is also influenced by cultural factors, as highlighted in earlier discussions. Notably, more positive feedback comes from Asian children, female participants, and those with higher levels of economic disadvantage [9]. Therefore, aside from considering age groups, the design of mindfulness classrooms should account for diverse cultural and socio-economic backgrounds to offer more suitable programs.

Moreover, the development of mindfulness practices varies across cultural groups, leading to distinct practices that better align with local contexts. For instance, the Koru practice in New Zealand focuses more on the connection between individuals and nature. Symbolizing balanced growth, Koru involves activities such as diaphragmatic breathing, guided intention, and mindfulness meditation [10]. In contrast, practices rooted in Buddhist and Eastern philosophy involve more yoga, body movement awareness, and perception of different parts of the body [5]. In the context of cross-cultural research, previous attempts to directly incorporate different cultural elements into mindfulness practices have not yielded significant results. In this regard, mindfulness research should give more consideration to cultural adaptability and the acceptance level within varying socio-economic backgrounds [11]. This approach would contribute to a more nuanced understanding of the effectiveness of mindfulness interventions in diverse cultural settings.

Despite significant progress in childhood mindfulness research, there remain gaps that warrant further exploration. Against the backdrop of the nuanced cultural considerations in mindfulness practices and their varying impact on different age groups, this study aims to bridge existing research gaps by delving into Mindfulness-Based Education, specifically exploring the cultural and age-related perspectives through innovative course design. To address the potential gaps in current research, which lack in-depth exploration focusing on children at different developmental stages, particularly concerning the impact of culture on mindfulness learning in children, and the potential curriculum design challenges for children with special needs.

2. Methodology

2.1. Research Design

This study employs an action study to investigate whether distinct course designs, informed by the synthesis of past experiments, can effectively engage participants of different age groups, diverse cultural backgrounds, and varying socio-economic conditions, ensuring genuine benefits. This approach entails creating an inclusive classroom environment with methods accessible to participants in terms of materials and electronic devices, ensuring participant willingness, as measured through their feedback and observations by experimenters.

2.2. Three Stages of the Study

2.2.1. Stage One – Theoretical Analysis

The course design utilizes proven mindfulness activities from previous experiments, adjusting them further based on age, cultural background, and socio-economic context. This stage elaborates on the fundamental theoretical logic of mindfulness, past designs, purposes, and outcomes of mindfulness activities.

2.2.2. Stage Two - Implementation

This stage encompasses the practical implementation of the designed curriculum, providing an overall description of the composition of participants and the classroom environment.

2.2.3. Stage Three– Reflection

The reflection stage involves summarizing student performance during the class and post-class feedback. Subsequently, a comprehensive evaluation and refinement of the entire course design will be conducted.

2.3. Data Collection and Analysis

Data for the experiment are sourced from two classrooms in China. Classroom A consists of second-grade students, primarily comprising migrant children of Chinese immigrant workers. Classroom B comprises first-year high school students residing in a welfare institution. Each class has around 15 students. Data collection involves student evaluations of the overall direction and experience of the class post-session, supplemented by experimenter observations of the overall classroom atmosphere and student performance. The final analysis and discussion will integrate existing mindfulness-related theories and scales.

This research design aims to provide a nuanced understanding of the effectiveness of mindfulness interventions in diverse educational settings, taking into account age, cultural background, and socio-economic conditions.

3. Stage One: Theoretical Framework

3.1. The Three Fundamental Principles of Mindfulness

Researchers have delineated three essential components, referred to as the "axioms" of mindfulness: Intention, Attention, and Attitude. These axioms are considered indivisible facets within a unified cyclical process, constituting the moment-to-moment emergence of mindfulness.

Intention pertains to the purpose, vision, or motivation behind practicing mindfulness. Intentions may encompass reducing anxiety, cultivating empathy, or fostering overall well-being. Studies indicate that as mindfulness practice deepens, intentions transform, akin to the changing seasons. For instance, initial intentions focused on self-regulation and stress coping may evolve into self-exploration and liberating transformations. Clearly defining intentions aids in stabilizing the direction of the practice. Attention involves observing internal and external experiences without detailed processing or judgment. Mindfulness trains attention, and sensory awareness, as well as the flexibility and control of attention. Attitude encompasses the qualities brought to attention, such as patience, compassion, acceptance, curiosity, and tranquility. This imparts a benevolent presence to mindfulness, free from conflicting emotions [12]. These axioms, as interpretations from the realms of human thought and cognition, propel the entire dynamic process of mindfulness.

Together, intention, attention, and attitude constitute an inseparable and dynamic process, wherein mindfulness unfolds in every passing moment. Mindfulness activities revolve around these three principles and develop diverse practices and variations to engage individuals in their daily lives. Therefore, all our mindfulness activities further expand and extend within the framework of how these principles operate.

Mindfulness Practice of Gratitude Journal: Shifting from "What If" to "What Are"

The "what-if" thought pattern falls under the psychological concept of counterfactual thinking, which involves contemplating and imagining outcomes different from those that actually occurred [13]. Instead of succumbing to "what-if" thinking, adopting a gratitude journal aligns more with the concept of a "what-are" journal. Research has demonstrated that practices such as maintaining a gratitude journal and noting three good things significantly enhance measures of happiness, gratitude, and stress reduction [14]. This involves documenting unexpected but cherished aspects and details of life. For instance, forming meaningful connections with interesting friends in a less-than-satisfactory school, or encountering blooming flowers due to a wrong turn. Gratitude journal instructions may include recording three things you are grateful for each morning and noting three positive occurrences at the end of the day [15]. The primary goal of this practice is to make participants aware of tangible, graspable elements in their present moment, offering support and alleviating negative emotions [15]. Encouraging participants to capture life's surprises promotes a return to the present, opening their senses to appreciate the beauty of the current moment. Moreover, this method is highly feasible, well-received, and sustainable [15], making it suitable for integration into mindfulness classroom settings.

This practice effectively guides participants to focus on what is presently perceivable and controllable, fostering a supportive environment and reducing negative emotions. Encouraging individuals to capture life's surprises allows them to reconnect with the present, opening their senses to appreciate the beauty of the current moment. Furthermore, this method is highly feasible, well-received, and sustainable, making it suitable for integration into mindfulness classroom settings [15].

3.2. Mindfulness Practice of Meditation and Focus

Mindfulness meditation practices, whether static or movement-based, prove beneficial for enhancing children's self-regulation across developmental stages. An essential form of static mindfulness meditation involves guided sitting meditation, encouraging individuals to maintain a specific position and direct ample attention to their perceptions. For instance, children can be prompted to relax fully and focus on sensory aspects, concentrating all their attention on a chosen sense. In teaching, a crucial aspect is for educators not to command children to stay still in a manner that enforces classroom order [5]. In contrast, research suggests that dynamic exercises are more suitable for children in the stage of developing executive function skills, aiding them in acquiring processes such as initiation, planning, organization, transitions, problem-solving flexibility, emotional regulation, and sustaining attention. Teaching methods may involve using props for breathing exercises and concretizing abstract perceptions, thereby expressing emotions through movement [16].

In summary, irrespective of age or the static or dynamic nature of mindfulness training, participants are required to avoid excessive concern about their emotions, thoughts, and other mind-body phenomena, simply cultivating awareness and fostering an objective attitude towards them. Patience is crucial in maintaining a patient and peaceful coexistence with various mind-body states. Directing focused attention to the present moment and gradually increasing awareness are fundamental aspects. For children at different developmental stages, this serves as an optimal approach to providing concrete awareness space, wherein teachers play a role in offering opportunities for free expression and perception of the emotions children wish to acknowledge [5].

3.3. Mindfulness Practice of Sensing and Daily Life

Mindfulness predominantly involves controlling one's emotions, sensations, thoughts, and bodily perceptions while being aware of present actions. As discussed earlier, for children, learning to be aware of and regulate thoughts, feelings, emotions, and sensations can be challenging in certain situations [5]. Adolescents, facing significant stress, may experience emotional instability, and inappropriate classroom activities and course designs can diminish their interest in mindfulness practices [9]. Incorporating mindfulness activities into the daily lives of children and adolescents can help them develop positive mental health, enhance self-control, and foster positive self-esteem [11].

In terms of visual and tactile aspects, practices like meditation and gratitude journaling, as mentioned earlier, prove effective. Activities such as body scanning and mirroring help students perceive and genuinely "scan" each part of their bodies. Tactile experiences include walking, and interactive activities with props like sand trays or bubbles, aiding students in perceiving themselves and their surroundings. Auditory aspects, as mentioned earlier, focus on everyday training, such as mindful listening and guided mindfulness meditation outdoors [10]. Regarding mindfulness activities in taste, mindful eating involves students consciously savoring the taste, texture, and sensations of food while chewing and swallowing slowly. Blindfolded taste tests can also be conducted for tactile mindfulness experiences [11]. Mindfulness activities concentrating on perception center more on the concepts of "the present moment" and "sensation," holding significant positive psychological potential for the daily mindfulness development of children and adolescents [17].

4. Stage Two: Implimentation

4.1. Class Design A - Elementary Immigrant Family Students

Conducted mindfulness activities for a class of 16 second-grade children of migrant workers through online teaching.

Table 1: Class design and material use for elementary school class A

Content	Type	Materials	Procedures
Self-regulation and basic ideas of mindfulness	Theory Content	N/A	Utilized a question-and-answer format to elicit relevant theories on emotion management and mindfulness concentration. For instance, inquired about instances when children had homework to do but found their minds unsettled, desiring to play instead. Subsequently, guided the discussion toward mindfulness-related forms and theories [5].
Anxiety Pie	Gratitude Journal Related Activity	Notepaper (sticky notes), pens, a small container (bowl, box, pen holder, etc.)	1. Identify Stressors (2-3 minutes): Concentrate on sources of stress, striving to recognize all aspects of life that induce feelings of tension, suppression, negativity, or disturbance. 2. Write Stressors on Notes: Record these stressors on individual pieces of notepaper or sticky notes, addressing one stressor per note. 3. Visual Representation: Crumple each note containing a stressor and place them into the designated container (paper box, bowl, pen holder, etc.). This provides a tangible and visual representation of the numerous stressors affecting the individual.

Table 1: (continued).

Mindful stretching activities in nature	Meditation Related Activity	Being able to teach outside of the classroom	<p>Start with the outside natural environment. Initiate the activity by adopting deep breathing techniques, concentrating on the natural breath. Feel the freshness of the air and the ambiance of nature to enhance the depth and frequency of breathing.</p> <p>Engage in simple and comfortable stretching exercises, such as extending arms, twisting the body, or bending at the waist. Maintain mindfulness in each movement, emphasizing the sensation of stretching and relaxing every inch of the muscles. Throughout the process, encourage children to envision the movements they believe should be performed in their minds.</p>
(Returning to the classroom after outdoor activities) Mindfulness sitting exercise	focusing on present activities and daily habits	N/A	<p>Children select a comfortable, upright sitting posture, ensuring both feet are flat on the ground, sitting midway on the chair, with a naturally straight spine, and the head and neck upright. Guidance and support are provided to those struggling with the correct posture, ensuring every child adopts a mindful sitting position.</p> <p>Next, children follow a one-minute breath-focused exercise, eyes open or closed, fully relaxing, and directing attention to body sensations. They inhale deeply, focusing on the abdomen's slight rise, exhaling while feeling the slight contraction. This process is repeated three times, with acknowledgment that attention drifts are a normal part of the exercise.</p> <p>Post-breath training, children observe their internal state, reflecting on thoughts, readiness for the next activities, and current emotions and sensations. This mindfulness sitting training serves as a valuable transition, fostering a sense of presence and emotional awareness between outdoor activities and classroom engagement.</p>

Due to the general sense of classroom orderliness among Chinese children, there were no issues with manners during the classroom process. However, this has raised more concerns for me: whether the children would genuinely absorb the content I was presenting rather than simply trying to comply with me to maintain classroom discipline. Our classroom sessions were conducted online, allowing me to overview the reactions and learning situations of all classmates. In order to better adapt to the teaching methods of primary school lower-grade children, I introduced the basic concepts of self-regulation and mindfulness through questioning. I asked about their reactions when needing to focus on tasks or their emotional responses in specific situations to initiate the discussion. During this process, some students responded positively, actively sharing their thoughts. To gain a basic understanding of the students in the class, I also selected a few students to briefly answer related questions. Afterward, with the assistance of the teaching assistant, we distributed activity materials and conducted the first activity, the anxiety pie. This activity primarily served as a mindfulness perception exercise for students to review and categorize potential sources of stress in their lives. The main focus was on understanding their thoughts and feelings when these stressors occur. Students

were required to concentrate on their writing process, the crumpling of notes, and observing the state of their small paper boxes.

After the concrete review and discussion in this round, more students chose to share something that troubled them during the sharing session. In this process, I also shared experiences that students could relate to, making them more willing to share their own experiences. Next, we engaged in mindfulness meditation activities in nature and the sitting exercise after returning to the classroom. This project was mainly assisted by in-person support from teaching assistants accompanying the children. The outdoor activity took place in a park near the school, and the students were very focused as they found the experience of outdoor classes novel. During this process, students were encouraged to amplify their five senses, paying attention to what they perceived, saw, heard, smelled, and touched. The activity also included meditation focusing on amplifying auditory and tactile sensations. After returning to the classroom, we concluded with the mindfulness sitting exercise, also as a small daily habit. Most students were highly engaged in this process. It is noteworthy that during the indoor mindfulness sitting training, students who couldn't hear me clearly would actively interrupt to seek clarification. However, this did not disrupt the focus of other students, and those who asked questions quickly returned to a state of concentration.

4.2. Class Design B - High School Orphanage Students

Through online instruction, mindfulness activities were conducted for a small class of 16 students in the first grade of a high school, all residing in a welfare institution.

Table 2: Class design and material use for high school class B

Content	Type	Materials	Procedures
Breath Space Exercise	Meditation Related Activity	N/A	Facilitate students' focus on the upcoming mindfulness class by employing soothing music and a standard meditation process. Integrate questions to assist students in establishing and reinforcing their thoughts and concerns about the upcoming mindfulness class, addressing any uncertainties they may have.
Discussion on Self-Care and Stress	Theory Content	Paper and pen	Prompt: "Throughout our growth, each of us encounters setbacks and experiences moments of frustration and sadness. Now, please carefully recall such an event and express in writing or through drawing the specific feelings you experienced." After sharing past experiences, prompt students to write about current stressors, emphasizing personal feelings. Expand the discussion to include prompts on how to overcome such situations and reduce self-imposed "strictness" or self-criticism, emphasizing that self-care involves letting go of judgment and criticism, accepting oneself with an open mind. This leads to an exploration of different stress types, including distress and eustress, encouraging students to share their experiences. Subsequently, explain the fundamental principles and states of mindfulness.

Table 2: (continued).

Introduction to Types of Self-Care Habits and Encouraging each others	Gratitude Journal Related Activity	Paper and pen	Provide a brief overview of different types of self-care habits and encourage students to reflect on whether there are activities they can incorporate into their lives. Afterward, have students write down their reflections on cards, emphasizing mindfulness during the writing process.
Mindful Eating Training with Raisins	focusing on present activities and daily habits	Raisins	Conduct mindfulness eating training by having students experience the act of tasting raisins. The primary objective is to help students slow down, redirect their focus and awareness to the present moment, and pay attention to the simple act they are engaged in. This activity serves to bring attention and awareness to what students are doing, even in the case of a routine action that requires no significant thought, fostering a sense of control.

The entire course followed the sequence outlined in the lesson plan, with interactions and teachings progressing in order. It is noteworthy that the process did not unfold as smoothly as anticipated during the course design. Despite the initial challenges, the engagement level of the students significantly improved as the class progressed. For the high school class, I incorporated additional discussion and sharing segments after each lecture or activity. This involved dedicating a small portion of time for students to present their own writing or share their experiences. However, during the initial two activities—Breathing Space Exercise and Stress Discussion—there was limited student willingness to participate in the sharing segment. To address this, I first shared my experiences and narratives before inviting students to contribute. In the final mindfulness eating activity, there was a notable increase in student engagement and sharing. The shift in the students' willingness to share during this time surprised me, and I will analyze this further in Stage 3.

Regarding the mindfulness eating activity, students shared reflections on different aspects. Firstly, they reviewed the entire process and discussed sensory amplification: "the texture, shape, the sweet scent, the friction between fingers, the transition from dry to sweet, a slightly scratchy feeling down the throat after consuming three raisins." Secondly, they highlighted the connection between this activity and their learning and life: "helps me focus better on studying, calmly solving each problem step by step, not feeling rushed; in daily life, it can slow down and appreciate the journey forward instability." Lastly, reflections on cultivating daily habits were shared: "often forget about mindful eating in daily life, realizing how challenging it is to change habits; need to apply it more in the future." Student sharing increased the classroom's harmony and energy, prompting me to briefly revisit each section and provide a concise recap of the previous content in the final segment. Overall, students showed anticipation for future mindfulness eating sessions, viewing it as an uninterrupted and valuable practice.

5. Stage Three: Reflection

In the third phase of the action research, I summarized the overall feedback from the students and analyzed their responses and reflections based on the actual classroom situations. When implementing the mindfulness classroom design through action research, I advocated for a curriculum consistent with children's cognitive development theories, emphasizing age-appropriate activities. The teaching model focused on mindfulness-related theoretical explanations, activities emphasizing present moments, meditation-related exercises, and sensory-related activities, and linking these to habits

applicable in daily life to enhance student engagement and achieve positive outcomes to the maximum extent.

In the primary school classroom, considering students' limited understanding of profound perceptual topics, I opted for more tangible manifestations, allowing them to experience mindfulness activities more concretely. In these classes, students demonstrated outstanding participation and willingness to share their personal experiences. Concerns related to students' cultural and socioeconomic backgrounds were addressed through relevant designs. Considering students' environments and economic conditions, the school and teachers provided all necessary course materials. Students showed a good understanding of this mindfulness class, actively participating in the course, confirming the rationality of this teaching design through the smooth progress of the course and their positive engagement.

In the high school classroom, there were challenges with students' initially less positive feedback, but post-class feedback revealed a more optimistic perspective. This included feedback on self-care: "I will carefully review the reasons for exam failures, then tell myself that I have now identified the reasons for this failure, and I will do better next time." Also, encouragement-related feedback: "Stereotypes in cognitive impressions may be inaccurate; discovering new aspects from a different perspective, breaking mental patterns, not defining new experiences with old thoughts." When asked about their initial reluctance to share in the first half of the course, many students expressed uncertainty about what they truly wanted to express and concerns about the correctness of their responses or uncertainty about which aspect of the response was most appropriate. However, the later lecture clarified that mindfulness is about not judging, being in a calm and accepting state, dispelling many of their concerns, and making them more willing to share relevant content. This prompted my reflection on the sequence of classroom activities and provided more ideas for the overall mindfulness classroom design. That is, a comprehensive understanding and research of student backgrounds before preparing and designing classroom activities are essential. Only the model mentioned earlier is not enough; more importantly, considerations and inclusion of students' actual situations in this structure are crucial. That is, age group, socioeconomic background, cultural background, and other specific needs are particularly important for mindfulness class design.

This raised considerations about the importance of comprehensive understanding and research into student backgrounds before preparing and designing classroom activities. While the mentioned model is essential, a more critical factor is the incorporation of considerations for students' actual situations. Factors such as age, SES background, cultural background, and other specific needs are crucial for the design of a mindfulness classroom.

6. Discussion

In further expounding upon the conceptual framework guiding my mindfulness classroom design, it is essential to delve deeper into the theoretical underpinnings that inform the age-appropriate nature of the curriculum. Drawing inspiration from prominent theories of cognitive development, such as Piaget's stages of cognitive development and Vygotsky's socio-cultural theory, the curriculum is meticulously crafted to resonate with the cognitive capacities and comprehension levels of children in the designated age group [18]. The emphasis on present-moment experiences within the curriculum aligns with the developmental milestones of the students. By anchoring mindfulness practices in the "here and now," the curriculum not only caters to their cognitive abilities but also instills a foundational understanding of the significance of being present in one's daily experiences. This focus contributes to the cultivation of mindful awareness, a skill that can serve as a lifelong asset.

The incorporation of mindfulness meditation exercises serves a dual purpose. Firstly, it introduces children to practical techniques for managing their thoughts and emotions, fostering self-regulation skills. Secondly, it aligns with the cognitive flexibility and executive function development crucial

during this stage of childhood. The meditation exercises are designed to be accessible, engaging, and aligned with the cognitive developmental stage of the students, ensuring both relevance and effectiveness [10]. Furthermore, the inclusion of sensory-related activities capitalizes on the experiential nature of learning. By connecting mindfulness practices with the students' sensory experiences, such as taste, touch, sight, and sound, the curriculum not only engages multiple facets of their development but also reinforces the integration of mindfulness into their daily lives. For instance, the exploration of mindful eating experiences opens avenues for discussions around gratitude, curiosity, and the connection between sensory awareness and emotional well-being. Considering the unique socio-economic context of the students, where resources might be limited, the collaborative effort between the school and teachers to provide necessary materials underscores the adaptability and practicality of the curriculum. This collaboration ensures that mindfulness education is accessible to all students, promoting inclusivity and equity.

In summary, a solid foundation has been established through the integration of mindfulness-related theoretical discourse, a focus on present-moment activities, meditation-related practices, sensory-related activities, and a teaching approach that connects these to habitual application in real-life situations. These subtle adjustments, informed by developmental theories and practical considerations, have been instrumental in reinforcing the effectiveness of this approach. The positive feedback and sustained engagement obtained through adaptive responses to diverse student circumstances underscore the alignment with the overarching theme of mindfulness-based education and emphasize the significance of tailoring interventions to the specific needs and backgrounds of participants.

6.1. Limitations

Reflection on the feedback from adolescents reveals certain nuances and instabilities in their responses. Recognizing that adolescence is a crucial developmental stage marked by individual variations, it becomes evident that a more refined curriculum design is imperative. The present curriculum, while demonstrating effectiveness, may encounter challenges in catering to the diverse cultural backgrounds of adolescents, particularly within the context of China's collective culture. Given that China values collective harmony even among adolescents seeking individual identity, the current curriculum's alignment with this cultural context has been a strength [11]. However, it is essential to acknowledge that this emphasis on collectivism may not be universally applicable, especially in cultures that prioritize individualism. The curriculum's current design, which resonates well with the sociocultural dynamics of China, might require adaptations to suit the needs and preferences of adolescents in more individualistic societies.

Furthermore, adolescence, characterized by a quest for identity and a desire to align with adult roles, underscores the need for nuanced course design [11]. In response to this developmental aspiration, the current curriculum has been tailored. However, it is essential to recognize that additional considerations may enhance its relevance further. For instance, incorporating elements that resonate with the socio-emotional challenges typical of adolescence can provide a more comprehensive and relatable learning experience. Moreover, the curriculum's applicability to a broader range of cultural contexts remains a critical consideration. The current application has been limited to low socioeconomic status (SES) children in China, raising questions about the generalizability of the findings. While the curriculum exhibits promise within this specific cultural and socioeconomic context, extrapolating its efficacy to a more diverse population necessitates caution. Future iterations of the curriculum should explore cultural adaptations to ensure its universality and effectiveness across different cultural backgrounds. Expanding the geographical scope and cultural diversity of the participants in subsequent studies can mitigate this limitation. Including adolescents from varied cultural backgrounds and SES levels will not only enhance the

external validity of the findings but also contribute to a more inclusive understanding of mindfulness interventions in diverse contexts.

In conclusion, while the current curriculum design addresses the developmental needs of adolescents in low SES settings in China, there are inherent limitations. The feedback variations among adolescents underscore the complexity of this developmental stage. As the curriculum evolves, considerations for cultural nuances and a more expansive participant pool are essential for refining and broadening its impact, ensuring that it remains a relevant and adaptable tool for promoting mindfulness in adolescence, especially when considering variations in cultural orientations towards individualism and collectivism.

7. Conclusion

In conclusion, the exploration and implementation of mindfulness-based education, particularly in the context of children and adolescents, shed light on the multifaceted nature of this transformative approach. The culmination of our research journey underscores the importance of designing mindfulness curricula that align with children's cognitive developmental stages, engage them in present-focused activities, incorporate meditation practices, foster sensory awareness, and integrate connections with everyday life.

The core proposition for an effective mindfulness curriculum lies in its ability to synchronize with children's cognitive and emotional developmental trajectories [7]. By adhering to age-appropriate content and delivery methods grounded in developmental psychology, we can optimize the impact of mindfulness education. Recognizing and respecting the evolving cognitive capacities of children is fundamental to tailoring interventions that resonate with their unique needs and capacities.

In essence, the envisioned mindfulness curriculum, founded on age-appropriate content, present-focused activities, meditation practices, sensory awareness, and real-life connections, holds the promise of fostering a more profound and enduring impact on children. As we advocate for the continued refinement and expansion of mindfulness-based education, incorporating these principles into curricular designs can pave the way for a more applicable and transformative approach to nurturing the well-being of the younger generation.

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